

**RTCA Special Committee 209**  
**ATCRBS / Mode S Transponder MOPS Maintenance**  
**Meeting #7**

**In Joint Session with Eurocae WG-49**

**Eurocontrol Headquarters, Brussels**  
**20 – 24 August 2007**

**Notification of Change to Appendix B**  
**For Register 52<sub>16</sub>**

**Presented by: Gary Furr, Engility Corp**  
**Supporting the FAA Technical Center**

**SUMMARY**

This Working Paper presents a copy of a change that is represented in version 1.9 of the draft of Appendix B for the modification of Register 52<sub>16</sub> as agreed to by the ICAO ASP Technical Subgroup (TSG) during their last meeting in Paris, 2 – 6 July 2007.

## 1.0 Introduction

What follows on the next three pages is a copy of Working Paper **TSG WP03-02R1** which was originally submitted by Don Walker of Honeywell International in order to clarify a change that had originally been agreed to by the ICAO ASP TSG during their previous meeting in February in Fort Lauderdale.

The ICAO ASP TSG had originally agreed in Fort Lauderdale to change the FOM/Source Coding from referencing “RNP” to referencing “FOM.” Unfortunately, the entire change was not implemented into the draft of ICAO Doc 9871 during the Fort Lauderdale meeting. Therefore, Don Walker noticed after the Fort Lauderdale meeting that the FOM/Source Coding values were not consistent with those defined in RTCA/DO-260A, which have long been accepted as being correct for FOM Coding. Hence, the need for Working Paper **TSG WP03-02R1** during the Paris TSG meeting in order to correct ICAO Doc 9871 prior to the publication.

The contents of TSG WP03-02R1 have been implemented into the draft version 1.9 of Appendix B for Register 52<sub>16</sub>.

**AERONAUTICAL SURVEILLANCE PANEL (ASP)**

**Technical Subgroup Meeting**

**Paris, France  
2 – 6 July 2007**

**DOC 9871 CP TO CORRECT THE FOM/SOURCE CODING OF  
REGISTER 52<sub>16</sub>**

(Prepared by Don Walker, Honeywell)

(Presented by Gary Furr)

**SUMMARY**

Due to an oversight in editing Doc 9871, the FOM/Source coding of register 52<sub>16</sub> is not consistent with the coding of the ES MOPS, RTCA/DO 260A. This working paper presents a CP to correct the coding of FOM/Source.

## **Proposed change to: Doc 9871**

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Submit to: Rapporteur ASP Working Group

Page 1 of 2

1. Change No **TBD** Date submitted: July 2007

*Title:* Doc 9871 CP to Correct the FOM/Source Coding of Register 52<sub>16</sub>.

2. List of all relevant ASP WG-B Working Papers: TSG WP03-02R1 (This paper)

3. Background: Doc 9871 contains the coding of transponder registers

4. Need for change:. The FOM/Source coding for register 52<sub>16</sub> does not agree with the coding of the ES MOPS DO260A

5. Change: FOM coding should be changed so that it corresponds to DO-260A quantizations. See Attachment.

6. Category: (confirmed by Rapporteur)

1. Addition - new material e.g. new GICB, MSP, or Broadcast.
- X2. Update - technical change or correction to current document.
3. Useful - will enhance understanding of the document.
4. Cosmetic - needed to correct editorial error.

Submitted by: ASP Technical Subgroup

Organisation: ASP

Address: ICAO

**Table A-2-82. BDS code 5,2 – Position report fine**

**MB FIELD**

1	STATUS (see 1)
2	MSB
3	FOM/SOURCE
4	
5	
6	
7	LSB
8	MSB = 90/128 degrees
9	LATITUDE FINE
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	LSB = 90/16 777 216 degrees
26	MSB = 90/128 degrees
27	LONGITUDE FINE
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	SIGN
44	MSB = 65 536 feet
45	PRESSURE ALTITUDE OR GNSS HEIGHT (HAE)
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	

**PURPOSE:** To provide a high-precision three-dimensional report on aircraft position when used in conjunction with register 51<sub>16</sub>. information on the source of the data is included.

**FOM/SOURCE Coding:**

The decimal value of the binary-coded (Figure of Merit) FOM / SOURCE parameter shall be interpreted as follows:

- 0 = ~~Loss of navigational capability~~ FOM > 10 NM or Unknown Accuracy  
1 = FOM ~~20~~ 10 NM/18.5 km (e.g., INS data) pressure altitude  
2 = FOM ~~5~~ 4 NM/7.4 km (e.g., VOR/DME) pressure altitude  
3 = FOM ~~1~~ 2 NM/3.7 km (e.g., DME/DME or GNSS) pressure altitude  
4 = FOM ~~0.51 NM/1.85 km~~ 0.30.5 NM/926 m (e.g., DME/DME or GNSS) pressure altitude  
5 = FOM ~~0.30.5 NM/926 m~~ 0.2405 NM/556 m (e.g., DME/DME or GNSS) pressure altitude  
6 = FOM ~~0.03/501 NM/185.2 m~~ 0.02/405 NM/92.6 m (ILS, MLS or differential GNSS) pressure alt  
7 = FOM ~~0.02/405 NM/92.6 m~~ 0.01/1530 m (ILS, MLS or differential GNSS) pressure alt  
8 = FOM ~~0.01/1530 m~~ 0.00310 m (ILS, MLS or differential GNSS) pressure alt  
9 = FOM ~~0.00310 m~~ 3 m (ILS, MLS or differential GNSS) pressure alt  
10 = FOM ~~3 m~~ 3 m (ILS, MLS or differential GNSS) pressure alt  
11 = FOM ~~3 m~~ 3 m (ILS, MLS or differential GNSS) pressure alt  
12 = FOM ~~3 m~~ 3 m (ILS, MLS or differential GNSS) GNSS height  
13 = FOM ~~3 m~~ 3 m (ILS, MLS or differential GNSS) GNSS height  
14 = FOM ~~3 m~~ 3 m (ILS, MLS or differential GNSS) GNSS height  
15 = ~~FOM 0.01/15~~ (ILS, MLS or differential GNSS) GNSS height Reserved

*Note 1. – When GNSS is the source, then the FOM is encoded by the HFOM parameter. When RNP FMS is the source the FOM is encoded by the ANP.*

- 1) The single status bit (bit 1) shall be set to ZERO (0) if any of the three parameters are invalid and is identical to the status bit in register 51<sub>16</sub>.
- 2) The LATITUDE (fine) and LONGITUDE (fine) parameters are in 2's complement coding so they shall be interpreted in conjunction with the corresponding parameters in register 51<sub>16</sub>.
- 3) When GNSS height is contained in bits 42 to 56, ~~t~~he pressure altitude can be obtained from register 51<sub>16</sub>.

*Note 2. – Two's complement coding is used for all signed fields as specified in §A.2.2.2.*

*Note 3. – The Figure of Merit selected is the smallest number that encompasses the HFOM or the ANP.*